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Effect of Cisplatin on Ultrastructure and Viability of Adipose-Derived Mesenchymal Stem Cells

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Abstract

© 2016, Springer Science+Business Media New York.Mesenchymal stem cells (MSCs) can be used to develop new methods for cancer therapy because they have tropism for tumor niche. Currently, in clinical practice, the multipotent MSCs from adipose tissue (hADSCs) are considered to be promising cell type for therapy of various human diseases. These cells can serve as vectors to deliver therapeutic molecules into the tumor microenvironment. A new direction in the development of cancer cell therapy is to prime culture of MSCs with chemotherapeutic drugs. In such preparations, MSCs can provide targeted delivery of the drug not only into tumors but also to distant metastasis and premetastatic niches. However, the effect of these drugs on the MSCs biological properties is poorly understood. In cancer chemotherapy, cisplatin is one of effective cytotoxic drugs, which is used to treat various types of tumors. In the present study, we investigated the effects of the cisplatin chemotherapeutic drug on hADSCs and showed that concentration of 2.5 and 5 μg/ml of cisplatin has no effect on the viability, morphology, and ultrastructure of cells.

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Keywords

Adipose tissue, Chemotherapy, Cisplatin, Mesenchymal stem cells, Resistance